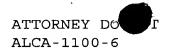
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Claims

1. A method of mapping a topology of the spare capacity of a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, comprising the steps of:

- a) outputting a message from each spare link of each of said nodes to the adjacent node to which said each spare link is connected;
- b) identifying the port number of said each node from where said each spare link outputs said message and the port number of the adjacent node connected to said each spare link whereat said message is received;
- c) storing as data the respective port numbers of all nodes that have connected thereto at least one spare link via which said message is either sent or received, the identifies of said all nodes and the spare links interconnecting said all nodes; and
- d) generating from said stored data the topology of all spare links interconnecting the nodes of said network.
- 2. The method of claim 1, further comprising the steps of;

storing said data in a central processing means; and

providing said generated topology of the spare links of said network to the origin node for

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beginning the restoration process if a failure occurs in said network.

- 4. The method of claim 1, further comprising the steps of:

selecting one of the custodial nodes of a failed link to be the origin node; and

said origin node utilizing said topology of the spare capacity of said network to find an alternate route to reroute the disrupted traffic.

The method of claim 2, further comprising the steps of:

continuously topdating the status of said message arriving at each spare port of the nodes of said network; and

storing said updated status in said central processing means;

wherein said central processing means is adaptable to use said updated status to provide a real time topology of the spare capacity of said network.

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- provisioned telecommunications network having a plurality of nodes interdonnected with working and spare links, a method of dontinuously monitoring the available spare capacity of said network, comprising the steps of:
 - a) generating keep alive messages;
- b) continuously exchanging said keep alive messages on the spare links of said network when a DRA event is not in progress; and
- c) recording the various spare ports that transmitted and received said keep alive messages to determine the number of spare links available in said network.
- 7. The method of claim 6, wherein said step c further comprises the step of:

generating each of said keep alive messages to include

a first field containing the identification number of the node that sent said message;

a second field containing the identification number of the port of said node whence said message is output;

a third field having an identifier that is set to a specific value when said node is one of the custodial nodes that bracket a failed link.



The method of claim 7, further comprising the

generating each of said keep alive messages to include a fourth field identifying said keep alive message to be a message that is continuously transmitted and exchanged along spare links between adjacent nodes of said network while a DRA process is not in progress.

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9. In a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, a message being transmitted between adjacent nodes of said network that are connected by at least one spare link for mapping the topology of the spare capacity of said network, comprising:

a first field containing the identification number of the node that sent said message;

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a second field containing the identification number of the port of said node whence said message is output; and

a third field having an identifier that is set to a specific value when said node is one of the custodial nodes that bracket a failed link;

wherein, when there is a failed link, said message is broadcast from one of the custodial nodes that bracket said failed link.

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10. The message of claim 9, wherein said message further comprises:

a fourth field for identifying said message to be a message that is continuously transmitted and exchanged along spare links between adjacent nodes of said network while a DRA process is not in progress.

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